



# **MOBILE6 and Compressed Natural Gas Vehicles**

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U.S. EPA Office of Mobile Sources



# Emission Standards

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- ✧ LEVs, ULEVs & ZEVs
- ✧ Assumes these vehicles are operated the same as other vehicles
- ✧ No allowance for separate commercial fleet fraction



# Compressed Natural Gas Vehicles in MOBILE6

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- \* Certified Conversion and OEM Vehicles
- \* Single Fuel Vehicles
- \* Light Duty and Heavy Duty
- \* User Input: Percent CNGVs by Model Year



# DATA

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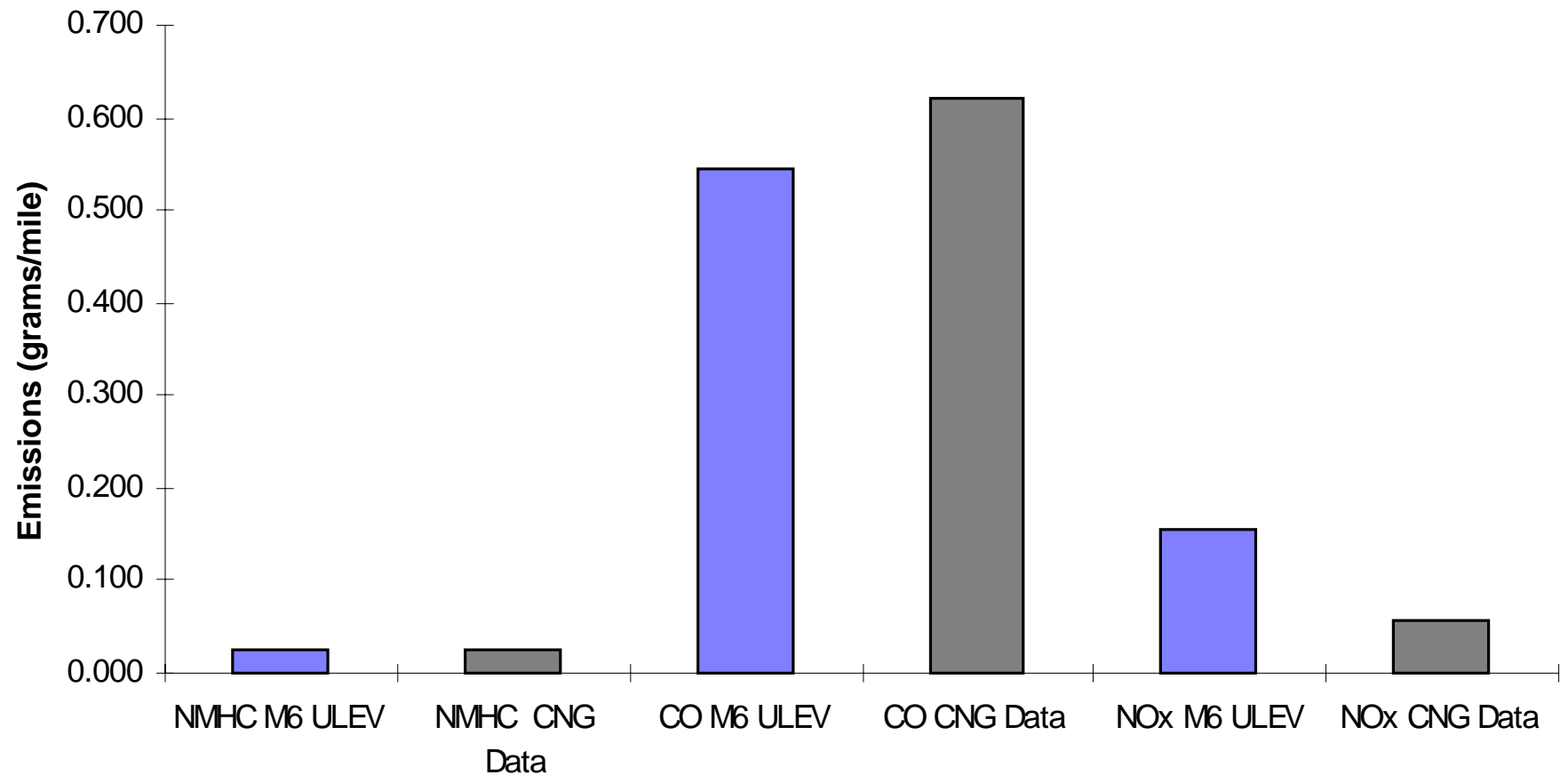
- \* Lack of In-use data
- \* GRI study
- \* 12 vehicles; 6 CNG, 6 Gasoline
- \* FTP Driving Cycle

# Methodology for Light-duty Vehicles

- \* Assumes CNG vehicles operate and accumulate mileage similar to their gasoline counterparts
- \* CNG = ULEV
- \* CNG benefit is equal to the percent reduction in emissions
- \* Applies to all light-duty vehicles

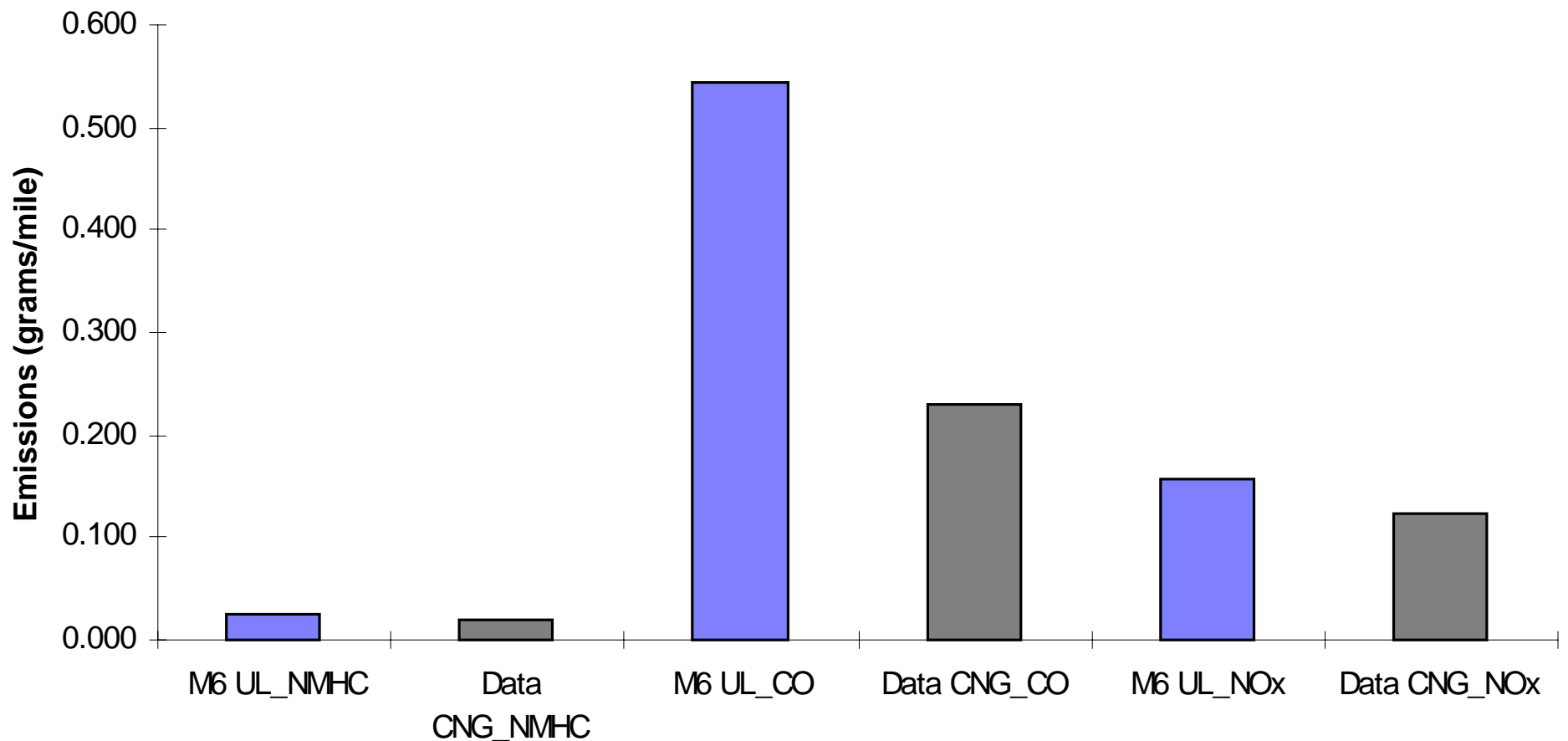
# Light-duty Gasoline ULEV vs. Light-duty CNG

M6 LDV ULEV Emission Estimates vs CNG Data



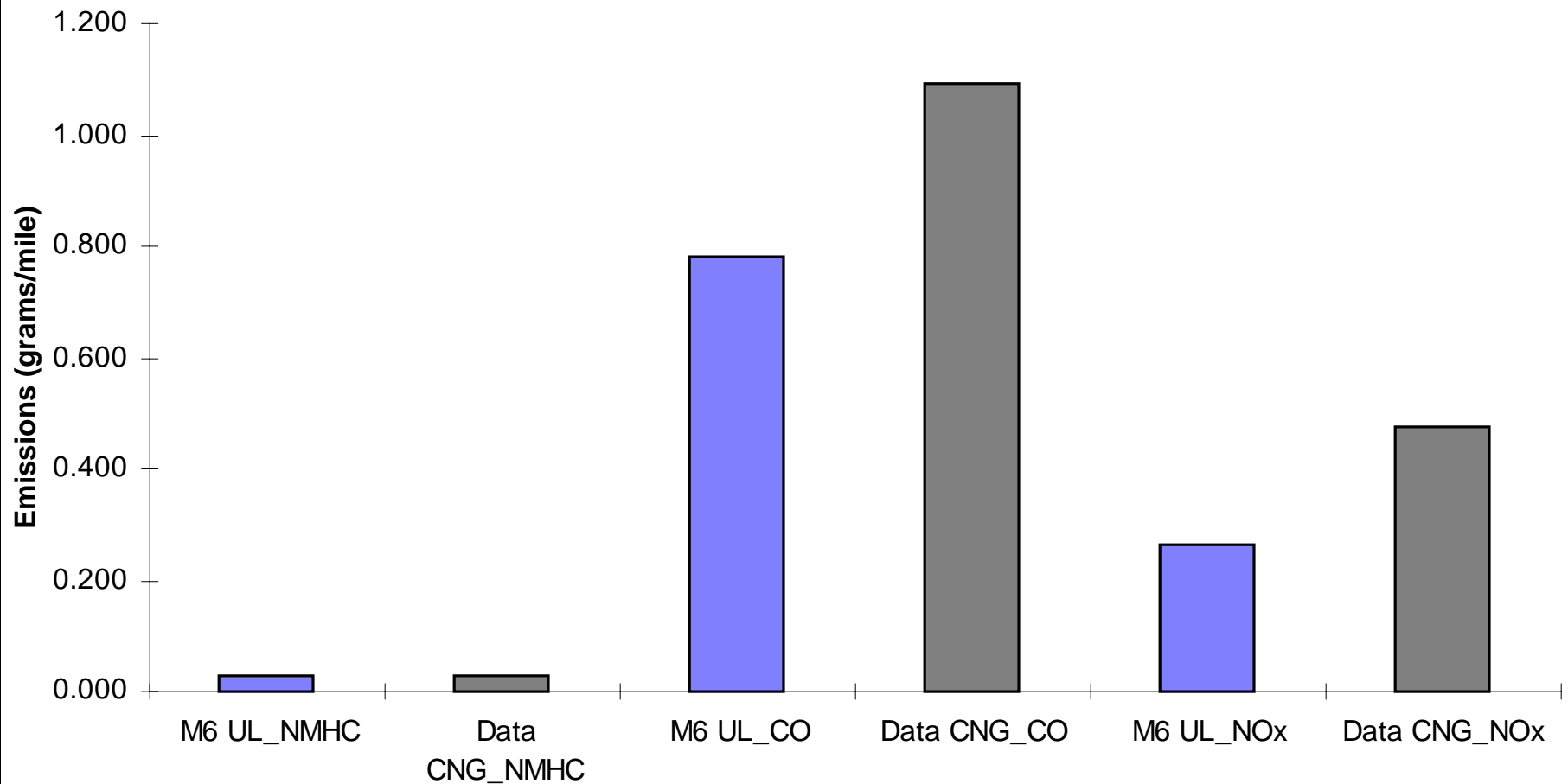
# M6 Light-duty Gasoline ULEV vs Light-duty Truck 1 CNG

M6 LDT1 ULEV Emission Estimates for vs CNG Data



# M6 Light-duty Gasoline ULEV vs Light-duty Truck 2 CNG

M6 LDT2 ULEV Emission Estimates vs CNG Data





# Methodology for Heavy-duty Vehicles

- \* Heavy-duty CNG vehicles operate and accumulate mileage similar to heavy-duty diesel and gasoline
- \* Heavy-duty CNG emissions = federal 2004 heavy-duty diesel standards
- \* CNG benefit = difference in standards (for Nox only)

# CNG in MOBILE6

- \* Assumptions and corrections associated with ULEV will apply to CNG
- \* No fuel corrections apply to CNG
- \* No non-exhaust emissions associated with CNG vehicles



# Other Considerations

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- ✧ Particulate Matter
- ✧ Deterioration



# Tier 2 and California's LEV2

- ✧ Proposed Tier 2 standards and California's LEV2 standards to be incorporated into MOBILE6
- ✧ CNG vehicles meeting these standards will get the additional benefit



# Summary

## \* Light-Duty

- CNG Emissions = LD Gasoline ULEV Emissions (for all pollutants)
- No evaporative emissions

## \* Heavy-Duty

- NO<sub>x</sub> CNG Emissions = federal 2004 NO<sub>x</sub> HD Diesel standard
- No HC or CO benefit
- No evaporative emissions